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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,282	03/30/2004	Yasutaka Nakashiba	8008-1052	2273

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EXAMINER

FENTY, JESSE A

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 04/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/812,282

Applicant(s)

NAKASHIBA, YASUTAKA

Examiner

Jesse A. Fenty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>03/15/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Muramoto et al. (U.S. Patent No. 6,198,140 B1).

In re claims 1 and 5, Muramoto (e.g., Fig. 5L) discloses a semiconductor device, comprising:

a substrate (11);

a plurality MOS transistors which are disposed in said substrate and which include gate insulating films (31a, 31b, 31c); and

a MOS type element (3a) which is disposed in said substrate and which includes a gate insulating film, the thickness thereof being thinner than the thinnest gate insulating film among said gate insulating films of said MOS transistors.

Muramoto does not expressly disclose the MOS type element (3a) being a varactor. However, such element meets the description in the claim. Applicant does not provide any definitive structure for the “varactor,” save that it is “MOS type.” The multiple MOS transistors disclosed by Muramoto have the same structure as claimed,

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one of the transistors (3a) having a gate oxide thickness that is thinner than the other MOS transistors (3b and 3c).

In essence therefore, the claim limitation that the element is a "varactor" is a recitation of the intended use of the device. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

In re claim 2, Muramoto discloses the device of claim 1, wherein a maximum gate voltage applied to said MOS type varactor element is lower than a maximum gate voltage applied to said MOS transistors (column 6, lines 61-67; column 10, lines 38-40).

In re claim 3, Muramoto discloses the device of claim 1, wherein said substrate is a semiconductor substrate.

In re claim 4, Muramoto discloses the device of claim 2, wherein said substrate is a semiconductor substrate.

In re claim 6, Muramoto discloses the device of claim 5, wherein said gate insulating film of said varactor and said gate insulating films of said plural MOS transistors are at a same level of the device.

In re claim 10, Muramoto discloses the device of claim 1, wherein said gate insulating film of said varactor and said gate insulating films of said plural MOS transistors are at a same level of the device.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 8, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muramoto (as above).

In re claims 7, 8, 11 and 12, Muramoto discloses the devices of claims 5 and 1 respectively, wherein the thickness of said gate insulating film of said varactor is less than the gate insulating film of the MOS transistors, but does not expressly disclose the three quarters ratio. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the varactor gate oxide thickness three quarters the thickness of one of the MOS transistors, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Here, Table 4 of Muramoto discloses a range of voltage and thickness values for the transistors of the invention. To optimize the device of Muramoto to determine a desired

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thickness gate oxide would be well within the skill of one in the art, and renders claim 7 obvious over such as disclosure.

Claims 9, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muramoto as applied to claim 5 above, and further in view of Applicant's Prior Art ("APA").

In re claims 9, 13 and 14, Muramoto discloses the device of claim 5, wherein the devices are N channel but does not expressly disclose P channel transistors and an additional diffusion contact region on the surface of the substrate. APA (Figs. 1A – 1C) discloses several variations of transistor well design including such claimed in claims 9, 13, and 14. It would have been obvious for one skilled in the art at the time of the invention to include P channel transistors and additional contact areas as disclosed by APA for the device of Muramoto for the purpose, for example, of enhancing the diversification of the device (N channel plus P channel) as well as providing contact areas to help bias the circuit, for example, for optimum performance. Therefore, one skilled in the art would have been able to configure the device of Muramoto in various ways in which to optimize the performance.

Response to Arguments

Applicant's arguments with respect to claims 1-4 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse A. Fenty whose telephone number is 571-272-1729. The examiner can normally be reached on M-F 5/4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Jesse A. Fenty", is written over the printed name and unit number.

Jesse A. Fenty
AU 2815